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and Michael T. Williams

**Green Chemistry in the
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Foreword

While we all recognize the value and benefits to mankind of the healing drugs that are used worldwide, we often take for granted how these precious materials are discovered and made. The expectations of modern society for improved safety, lower environmental impact, more sustainable practices, and lower energy use at a fair cost place tremendous demands and responsibility on us all, and the complex task of manufacturing pharmaceuticals has to balance current knowledge and the robustness and durability of the chemical and biological processes used with these regulatory pressures and escalating costs. Nevertheless, chemists and production engineers owe it to their profession and to future generations to adopt a charter which promotes the 'Green' agenda.

I therefore welcome this new text, which promotes improved and sustainable practices. It demonstrates clearly how through innovation, understanding, and commitment one can effect change and drive standards even higher. The chapters discuss all the relevant issues of the day as they relate to solvents, energy, new technologies, metrics, and lifecycle appreciation. The articles describing illustrative processes used by the major practitioners for producing worked-up pharmaceutical products amply demonstrate the attitude and advantages that can accrue by a more reflective and committed approach. Clean chemo-enzymatic processes alone, with continuous flow methods and improved optimization protocols, are beginning to make an impact and are certainly trends for the future. Our ability to better and more rapidly profile for impurities and evaluate alternative routes is leading to new opportunities and creating better understanding.

The future image of the industry and society's respect for it will hinge upon a clear demonstration of its belief in and stewardship of the principles of Green Chemistry. Indeed, there is nothing more worthy than our desire to improve our ability to meet healthcare needs for the betterment of everyone through sustainable practices.

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